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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,045	07/29/2003	Rene Jean Zimmer	DN2003111	9278

7590

06/16/2004

The Goodyear Tire & Rubber Company  
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EXAMINER

CHOI, LING SIU

ART UNIT

PAPER NUMBER

1713

DATE MAILED: 06/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/631,045	Applicant(s) ZIMMER ET AL.	
	Examiner Ling-Siu Choi	Art Unit 1713	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☐ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)<br>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)<br>3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date _____.<br>5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)<br>6) <input type="checkbox"/> Other: _____. |
|---|---|

### DETAILED ACTION

1. Claims 1-16 are pending, wherein claims 1-10 are drawn to a rubber composition, a sulfur-vulcanized rubber composition, an article, or a tire; claims 11-16 are drawn to a method of process a rubber composition.

#### *Claim Objections*

2. Claims 1-16 are objected to because of the following informalities: (a) claim 1, line 1; claim 11, lines 1-2, claim 13, lines 1-2, "a filler comprising" is suggested to be changed to --a filler, comprising--; (b) claim 4, line 1, "characterized in that" is suggested to be changed to --wherein--; and (c) claims 8-10 are multiple dependent claims which depend on another multiple dependent claim 7. Thus, claims 8-10 are objected because of the unclear boundary set by these claims.

Appropriate correction is required.

#### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (CN 1368518) in view of Guo et al. (CN 1398923).

The present invention relates to a rubber composition comprising

(a)	100 wt parts of at least one rubber containing olefinic unsaturation
(b)	1-25 phr of a filler
(c)	0.05-5.0 phr of zinc oxide particles having a diameter of less than 20 nanometers

(summary of claim 1)

Wang et al. disclose a rubber composition for the rubber pad under rail, comprising 100 part by weight, 1-5 parts by weight of promoter, 1-3 parts by weight of antiageing agent, 2-10 parts by weight of nanometer zinc oxide powder, 0.2-1.5 parts by weight of sulfurizing agent, 30-60 parts by weight of carbon black, 30-60 parts by weight of an inorganic filler, 0.5-10 parts by weight of tetra-acicular zinc oxide eshisker , and 0.2-5 parts by weight of coupling agent, wherein the rubber composition consists of natural rubber, styrene-butadiene rubber, and cis-1,4-polybutadiene rubber; nanometer zinc oxide has average diameter of 20-40  $\mu\text{m}$  (abstract; page 2, line 15-16; page 3-Table 1).

The difference between the present claims and the disclosure of Wang et al. is the requirement of zinc oxide particle having a diameter of less than 20 nanometers.

It is noted that the the diameter of nanometer zinc oxide disclosed by Wang et al. is an **average value**. In view of the process to prepare the nanometer zinc oxide, wherein the nanometer zinc oxide is obtained by precipitating zinc nitrate by urea in water at 70-100°C and then dry the resulting precursor of zinc oxide for 1-3 hours at 200-400°C (page 2, lines 13-15) ,

the nanometer zinc oxide would contain some amount of zinc oxide having a diameter falling into the claimed range.

Furthermore, Guo et al. disclose a method to prepare a modified nanometer and sub-nanometer superfine zinc oxide powder (abstract). Guo et al. further disclose that when the diameter of zinc oxide less than 100 nm, zinc oxide would have a specific chemical and physical properties, which is attributed to the quantum effect of size (page 7, lines 10-12). In addition, the case law held that "a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties." *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). In light of the benefits to have the diameter less than 100 nm, the ordinary skill in the art would be motivated to reduce the diameter of the nanometer zinc oxide disclosed by Wang et al. to the claimed range.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to reduce the diameter of zinc oxide in the disclosure of Wang et al. to the claimed range by the routine optimization and thereby obtain the present invention.

### ***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reach on 571-272-1114.

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*Ling - Siu Choi*

Ling -Siu Choi

June 10, 2004